15

Intrauterine Devices (IUD)

> *"Why do I choose the IUD?" the older mother said in response to a question asked by her women's group. "It is simple, really. I cannot travel so frequently to the clinic. And when I do get to the clinic, I sometimes must wait for a long time to be seen. When I took the pill, I sometimes heard that my contraceptive choice was "not in supply, please come back another day." The IUD is so easy to use. I have as many children as I want."*

As contraceptive use increases in Africa, the intrauterine device (IUD) is becoming one of the most acceptable methods. However, its popularity varies widely throughout the continent. For example, it is the most popular method in Egypt, where 16% of married women of reproductive age currently using a contraceptive method have an IUD, and one of the principal methods in Botswana and Kenya. In other countries, such as Mali and Uganda, as contraceptive use of any kind is low, very few women use the IUD.[26,35] Women with IUDs use them longer than most other reversible methods of contraception.[19]

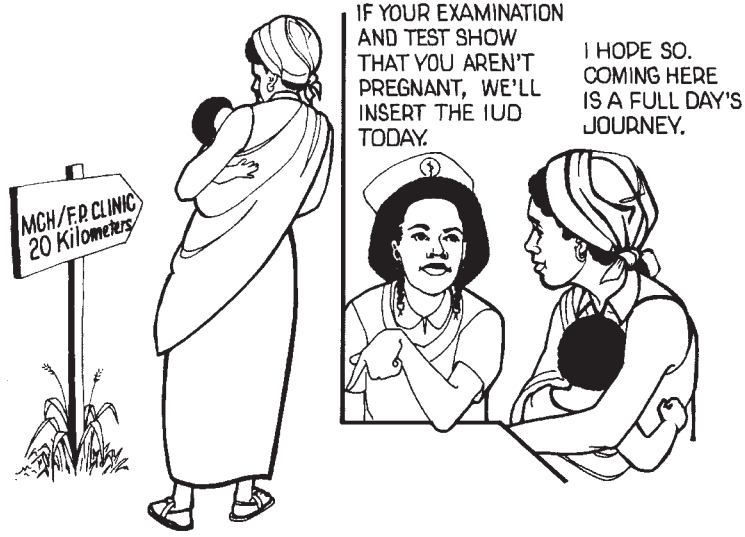
OVERCOMING BARRIERS

Some family planning programs have a policy that limits the time in the menstrual cycle when IUDs may be inserted—for example,

some programs allow IUD insertion only during menses. Although the purpose of such a policy is to make sure an IUD is not inserted into a pregnant woman, it is very inconvenient for clients and interferes with an effective IUD program. In some settings, women have to travel a long distance to reach a family planning clinic; rejecting their requests for an IUD because they are not having their periods would be unfair. In addition, return visits to the clinic cost money and thus create a barrier to services. As a rule, trust your client when she tells you she is not at risk of pregnancy, because she has not had intercourse since her last period or because she has used contraception. This basic trust contributes to thoughtful, dignified, and high-quality family planning services. (See Figure 15:1.) Several reasons support inserting the IUD at any time in the menstrual cycle:

- More options for convenient and flexible appointment times
- Lower infection rate and expulsion rate when the IUD is *not* inserted during days of menstrual bleeding
- At midcycle, the cervix is just as dilated as it is during menses and thus the IUD can be inserted easily at that time.[39]

Figure 15:1 If you can determine that the woman is not pregnant, an IUD can be inserted even if she is not menstruating



A panel of experts at the Centers for Disease Control and Prevention has developed the following guidelines for informing women about IUDs:[5]

1. Most important, allow the client to choose her own method. She must be an informed user.
2. Make all presentations, counseling, and educational materials compatible with the language, culture, and education of the clients.
3. Set aside time for counseling as a routine part of the clinic visit. During the initial visit, a woman needs counseling to help her select a method, then additional counseling immediately after the IUD insertion to learn about checking IUD strings and watching for signs that suggest problems.
4. Be aware of the local myths and misconceptions about IUDs. Gaining this awareness may require background research. Address the misconceptions sensitively but directly.
5. Ask the client to repeat important information about the IUD to make sure she understands.
6. Give each IUD user an identification card with the name and picture of the IUD. The card may note the date of insertion and date of recommended removal.
7. If a client is not accustomed to following a calendar, inform her about the recommended dates for check-ups and IUD removal.
8. Sample IUDs should be available so that women can handle and examine them.
9. Provide flip charts, posters, and handouts describing key information about IUDs (and other available contraceptive methods).

MECHANISM OF ACTION

New evidence shows that the IUD's principal mechanism of action is to prevent fertilization of the egg. The copper IUD stimulates a variety of responses, including an increase of uterine and tubal fluids containing enzymes and white blood cells (macrophages) that consume, damage, or alter the transport of sperm and ovum so that fertilization does not occur. The Lng-20 IUD, which has primarily a hormonal mechanism of action, thickens cervical mucus, disrupts ovulatory patterns, alters the endometrium, and changes motility in the uterus and tubes.[1,10,22,28,40]

EFFECTIVENESS

The effectiveness of modern IUDs compares favorably with other long-term contraceptive methods such as Norplant and sterilization. An IUD's effectiveness is influenced by its size, shape, and presence of copper or progesterone as well as by user characteristics such as age and parity. The pregnancy rate among IUD users also depends on such factors as ease of insertion, the clinician's experience in inserting IUDs, the patient's ability to detect IUD expulsion, and the patient's access to medical services. Pregnancy rates tend to be lower under the following conditions:

- The IUD is medicated with copper, silver, progesterone, or another progestin.
- The non-medicated IUD has a large surface area.
- The IUD has a low expulsion rate.
- Partial and complete expulsions are detected quickly.
- The IUD is inserted all the way to the top of the fundus of the uterus.

Copper T 380A. The Copper T 380A (Cu T 380A) has one of the lowest pregnancy rates of any contraceptive. The first-year pregnancy rate in typical users is 0.8%, whereas the lowest expected pregnancy rate (the rate for perfect use) is 0.6%.[36,37] At the end of 7 years, the total (cumulative) pregnancy rate is 1.7%.[25]

Levonorgestrel (LNg) IUD. Although expensive and not available in many countries, the Levonorgestrel IUD is the single most effective method of reversible contraception available in the world today, with the Cu T 380A running a close second. In the first 7 years, the total (cumulative) pregnancy rate is only 1.1%.[29]

MultiLoad Cu 375 (ML Cu 375). The pregnancy rate for the MultiLoad Cu 375 is 1% after 12 months, 1.3% after 24 months, and 1.8% after 36 months of use.[6]

ADVANTAGES AND INDICATIONS

The IUD is a highly effective, safe, long-acting contraceptive method, and the client needs to make only a single decision to use it. In contrast, the pill requires daily decisions, and condoms and spermicides require decisions with each act of intercourse. Although perhaps more expensive initially than other contraceptives, the IUD is less costly over its years of use. It is also easier to use than other methods such as oral contraceptives, condoms, and spermicides. The IUDs that release progestin or progesterone decrease menstrual blood loss and menstrual pain (dysmenorrhea). The LNg-IUD reduces the incidence of pelvic inflammatory disease (PID)[27] and is an effective treatment for heavy menstrual bleeding (menorrhagia).[3] In addition, IUDs can prevent and treat Asherman's syndrome (in which the walls of the uterus are adhered by synechiae), which can occur after uterine surgery.

Ideal candidates for the IUD include women who have medical precautions to hormonal methods, who want a long-acting and reversible method, who are in a mutually faithful relationship, or who are lactating or postpartum. Voluntary contraception and informed consent must always form the basis for contraceptive decision making.

The Copper T 380A has been used as an option for emergency contraception. When inserted *within 5 to 7 days* of unprotected intercourse, this IUD can significantly reduce the risk of pregnancy. Use of the IUD in this situation can lead to long-term use if the woman selects to keep the IUD. Only copper-bearing IUDs have been studied. The same precautions must be taken if the IUD is used as an emergency option.

DISADVANTAGES AND CAUTIONS

1. Pelvic Inflammatory Disease. One of the main concerns about using the IUD is the possibility of developing PID. Both use of the IUD and being at high risk for acquiring sexually transmitted infections (STIs) make women more likely to develop PID.[14] Women increase their risk of acquiring STIs if they have more than one sexual partner or if their partner has other sexual partners. The greatest risk of pelvic infection associated with the use of the IUD occurs at its insertion.[12] (See Table 15:1.) This increased risk of infection may be associated with a microbiological contamination of the endometrial cavity at that time.[19] To reduce the risk of PID, maintain strict asepsis at insertion and leave the IUD in place for its life span. The 1-year IUD (Progestasert System) is recommended only in unusual circumstances, such as allergies to copper. Compared with a copper-releasing IUD, the LNg IUD has been shown to provide a protective effect against PID.[33]

Table 15:1 Intrauterine device use and pelvic inflammatory disease (PID)

Time after insertion	PID rate*	Relative risk
≤20 days	9.66	6.36
≥20 days	1.38	1.00

*per 1,000 woman-years
Source: Lee (1988)

2. Human Immunodeficiency Virus (HIV). Whether IUDs increase the risk of acquiring the human immunodeficiency virus (HIV) is not known. Because information on this issue is sparse, use your clinical judgment in determining a potential user's risks.[35] The effect of IUDs on the uterine lining may create an environment favorable to HIV transmission. It is possible that the increased bleeding associated with the use of some IUDs may increase the transmission of the virus from HIV-positive women to their partners. According to one study, women who used other contraceptives or none at all had lower risks of HIV after exposure

than did IUD users.[18] However, another study from Kenya could find no increased risk of acquiring HIV among IUD users.[17]

3. Menstrual Problems. Increased menstrual pain (dysmenorrhea) may accompany IUD use. From 10% to 15% of IUD users have their IUD removed because of symptoms or signs associated with bleeding or spotting.[7,11] However, the blood is usually minor and of little consequence. The LNg-20 IUD actually decreases bleeding. Inserting this IUD in a woman with heavy bleeding will substantially decrease the bleeding. Many users will even experience amenorrhea.[16]
4. Expulsions. From 2% to 10% of IUDs are spontaneously expelled within the first year. One study found that risk factors for Cu T 380A expulsion were young age, an abnormal amount of menstrual flow, and severe dysmenorrhea before IUD insertion.[43]
5. Pregnancy. Half of intrauterine pregnancies that occur with the IUD in place end in spontaneous abortion.[15,38] If the IUD is removed early in pregnancy, the spontaneous abortion rate drops to about 25%.[15] Leaving the IUD in place during pregnancy increases the risk that the mother will have severe pelvic infection that leads to her death.[4]

   About 5% of women who become pregnant with an IUD in place will have an ectopic pregnancy.[38] Women who use the Progestasert System have a rate of ectopic pregnancy 6 to 10 times that of women who use copper IUDs.[2] Although the IUD labeling may identify never-pregnant (nulliparous) women as a group that should not receive an IUD, most scientific evidence indicates that the IUD is an option for nulliparous women. Nevertheless, the risks that may lead to impaired fertility need to be discussed with your client.

PRECAUTIONS

Informed consent is required of any woman who will have an IUD inserted. Women at greater risk of complications should consider another method of contraception. Table 15:2 lists World Health Organization's (WHO's) precautions.[41]

Table 15:2 Precautions to use of intrauterine devices (copper containing)

Condition	Category	Rational/Comments
Pregnancy	4	As no method is indicated, any health risk is considered unacceptable. However, there is no known harm to mother or fetus if IUD is used during pregnancy.
Breastfeeding		
a) <6 wks postpartum	1	Not a concern. No need for restriction of IUD use.
b) 6 wks to 6 mths post-partum (primarily breastfeeding)	1	
c) >6 mths postpartum	1	
Age		
a) Menarche—age 20	2	Concern about risk of expulsion in younger age-groups.
b) > Age 20	1	
Smoking		
a) Age <35	1	
b) Age >35		
i) light	1	No concern regarding risk of thrombosis
ii) heavy	1	with IUD use.
Eseential Hypertension		
a) Mild hypertension (<180/105)	1	
b) Moderate and severe hypertension	1	Not a concern. No need for restriction of IUD use.
c) Vascular disease	1	
History of preeclampsia	1	Not a concern. No need for restriction of IUD use.
Diabetes		
a) History of gestational disease	1	

1 = used in any circumstance
2 = generally used
3 = usually not used unless other more appropriate methods are not available or acceptable
4 = not to be used

Table 15:2 Precautions to use of intrauterine devices (copper containing) (Continued)

Condition	Category	Rational/Comments
Diabetes — *continued*		
b) Non-vascular disease: i) non-insulin dependent	1	Not a concern. No need for restriction of IUD use.
ii) insulin dependent	1	
c) Nephropathy retinopathy	1	
d) Other vascular disease or diabetes of >20 years' duration	1	
Venous Thromboembolism (VTE)		
a) Current and history of VTE	1	
b) Major surgery		
i) with prolonged immobilization	1	Not a concern. No need for restriction of IUD use.
ii) major surgery without prolonged immobilization	1	
c) Minor surgery without immobilization	1	
d) Varicose veins	1	
e) Superficial thrombophlebitis	1	
Current and history of ischemic heart disease	1	Not a concern. No need for restriction of IUD use.
Stroke		
a) Current (in hospital)	1	Not a concern. No need for restriction of IUD use.
b) History	1	

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Table 15:2 Precautions to use of intrauterine devices (copper containing) (Continued)

Condition	Category	Rational/Comments
Familial hyperlipidaemia	1	Not a concern. No need for restriction of IUD use.
a) Uncomplicated b) Complicated (pulmonary hypertension, risk of arterial fibrillation, history of SBE, anticoagulant treatment)	1 2	Prophylactic antibiotics are advised if the woman is not already receiving long-acting antibiotics.
On anticoagulant drugs	2	IUD use may be associated with prolonged bleeding in the first few months after insertion. It is unknown if anticoagulants aggravate the bleeding.
Headaches		
a) Mild	1	
b) Severe: i) recurrent, including migraine, *without* focal neurologic symptoms	1	Not a concern. No need for restriction of IUD use.
ii) recurrent, including migraine, *with* focal neurologic symptoms	1	
Irregular menstrual patterns (cyclic pattern maintained)		
a) *Without* heavy bleeding b) *With* heavy bleeding	1 2	Changes in menstrual bleeding patterns are common among healthy women.
Unexplained vaginal bleeding (cyclic pattern disrupted)		
a) Before/during evaluation b) After evaluation	4	Evaluation of the underlying pathological condition (such as pregnancy, pelvic malignancy) is required.
d) Trachomatis or N. Gonorrhoea	4	
e) Vaginitis without purulent cervicitis	2	

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Table 15:2 Precautions to use of intrauterine devices (copper containing) (Continued)

Condition	Category	Rational/Comments
Unexplained vaginal bleeding — *continued*		
f) Increased risk of STDs (e.g. multiple partners or partner who has multiple partners)	3	
STIs: current or within 3 months	4	Serious concern that IUD increases risk of PID.
HIV/AIDS		
a) HIV positive	3	
b) High risk of HIV	3	
c) AIDS	3	
Biliary tract disease		
a) Symptomatic		Not a concern. No need for restriction of IUD use.
i) surgically treated	1	
ii) medically treated	1	
iii) current	1	
b) Asymptomatic	1	
History of cholestasis		
a) Pregnancy-related	1	Not a concern. No need for restriction of IUD use.
b) Past hormone-related	1	
Viral hepatitis		
a) Active symptomatic	1	Not a concern. No need for restriction of IUD use.
b) Asymptomatic	1	
c) Carrier	1	
Cirrhosis	1	Not a concern. No need for restriction of IUD use.

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Table 15:2 Precautions to use of intrauterine devices (copper containing) (Continued)

Condition	Category	Rational/Comments
Liver neoplasia		
a) Benign (adenoma)	1	Not a concern. No need for restriction of IUD use.
b) Malignant (hepatoma)	1	
Schistosomal fibrosis	1	Not a concern. No need for restriction of IUD use.
Past ectopic pregnancy		Risk of future ectopic pregnancy is increased among women who have had an ectopic pregnancy in the past.
a) Subsequent pregnancy desired	3	
b) Subsequent pregnancy not desired	3	
Obesity	1	Not a concern. No need for restriction of IUD use.
Thyroid		
a) Simple goitre	1	Not a concern. No need for restriction of IUD use.
b) Hyperthyroid	1	
c) Hypothyroid	1	
Thalassaemia	2	
Trophoblast disease (current and recent history)	2	
Sickle cell disease	2	
Iron deficiency anaemia	2	Concern about increased blood loss in initial months of use.
Epilepsy	1	Not a concern. No need for restriction of IUD use.
Schistosomiasis	1	Not a concern. No need for restriction of IUD use.
Malaria	1	Not a concern. No need for restriction of IUD use.

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Table 15:2 Precautions to use of intrauterine devices (copper containing) (Continued)

Condition	Category	Rational/Comments
Drug interactions		
a) Antibiotics	1	Not a concern. No need for restriction of IUD use.
b) Drugs affecting liver enzymes	1	
Parity		
a) Nulliparous	2	Concern that nulliparity is related to risk of expulsion and concern about future childbearing.
b) Parous	1	
Rapid return to fertility desired	1	Return to fertility not affected.
Anatomical abnormalities		
a) Distorted uterine cavity (any congenital or acquired uterine abnormality distorting the uterine cavity in a manner that is incompatible with IUD insertion)	4	In the presence of an anatomic abnormality that distorts the uterine cavity, proper IUD placement may not be possible.
b) Other abnormalities (including uterine fibroids, cervical stenosis, or cervicallacerations) not distorting the uterine cavity or interfering with IUD insertion	2	Abnormalities not distorting the uterine cavity generally do not interfere with proper placement.
Severe dysmenorrhoea	2	Dysmenorrhoea may intensify with IUD use.
Immediate post partum including post abortion		
a) First trimester	1	Slightly increased risk for uterine perforation and expulsion if the IUD is inserted early in the postpartum period or following second trimester abortion.
b) Second trimester	2	
c) Postpartum	2	

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PROVIDING THE METHOD

Obtain a medical history and advise the client about whether the IUD is suitable for her. Discuss her risk factors and the safety and effectiveness of the IUD.

TYPES OF IUDS

IUDs have been made in various shapes, including rings, loops, spirals, T-shapes, and 7-shapes. The materials used have included silver, copper, and plastic. There are two categories of IUDs: those that are medicated and release hormones or copper and those that are not medicated. In Africa, the most commonly used IUDs are the Cu T 380A, and the Multiload 375 and 250. Those less frequently used include the Levonorgestrel IUD, the Copper T 200 and 220C, the stringless single-coil stainless steel ring, the Progestasert System, and the Cu-Fix. (See Figure 15:1.)

Cu T 380A. This IUD is Africa's most commonly inserted type for new IUD users. More than twenty five million Cu T 380A IUDs have been distributed in 70 countries.[18] The Cu T 380A comes in presterilized packages. The T shape is made with polyethylene. Barium sulphate is added to create x-ray visibility. Fine copper wire is wound around the vertical stem, and each of the two horizontal transverse arms has a sleeve of copper measuring 33 mm. The bottom of the T has a single filament of clear or whitish polyethylene string that is knotted after passing through a hole in the T, creating a double string effect. The upper limbs of the "T" are folded down into the inserter barrel no more than 5 minutes before insertion. The inserter tube is inserted so that it just touches the top of the fundus. The outer inserter tube is then retracted about l cm to release the arms of the device. The diameter of the inserter is 4.4 mm, but only the tips of the arms fit in the tube.

Multiload 375 and Multiload 250. These devices come in presterilized packages and are preloaded in an inserter tube. Insert these IUDs by retracting the outer barrel over the inserter rod. The vertical limbs of these devices have surfaces of 375 mm^2 or 250 mm^2 of copper.

Both the Multiload 375 and the Multiload 250 come in three sizes: standard, short, and SL (mini).

Levonorgestrel IUD. This new IUD is a highly effective contraceptive method developed by Leiras. Its active substance, levonorgestrel, is released directly into the uterus at a constant rate of 20 mcg per day for up to 5 years. This kind of delivery decreases the systemic effects of the hormone. The levonorgestrel IUD is based on a NOVA T model polyethylene frame and has a cylinder of polydimethyl-siloxane-levonorgestrel molded around its vertical arm. The cylinder is coated with a membrane that regulates the release of the hormone.

Copper T 220C. This IUD also comes in a presterilized package. Insert this IUD using the withdrawal technique. The IUD can be loaded and cocked into the barrel without the clinician touching the IUD. Although it may be initially difficult to fold the upper limbs of the "T" down into the inserter barrel, the procedure becomes easier with practice.

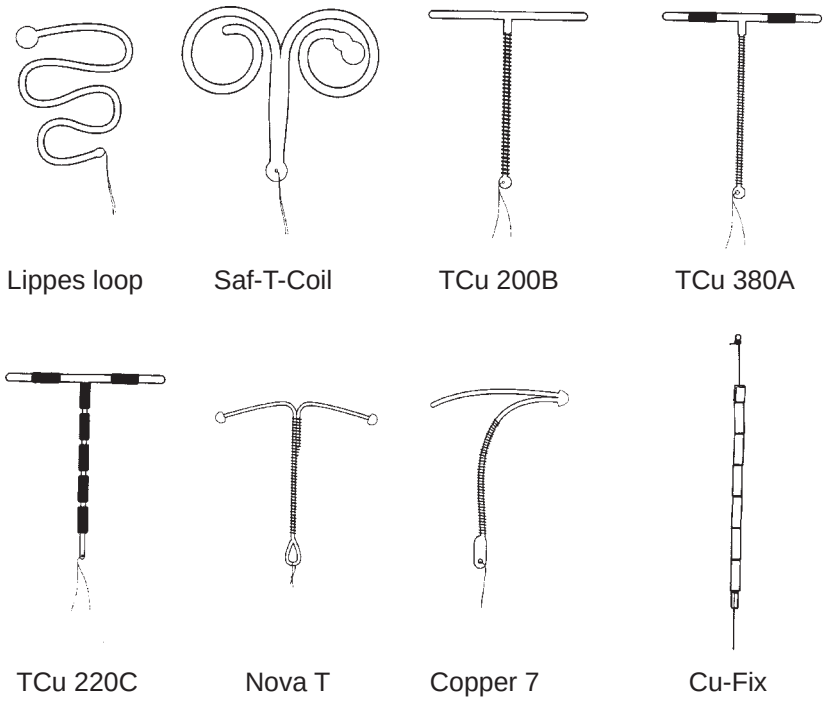
Stringless, single-coil stainless steel ring. This ring is the most widely used IUD in China. Rings come in sizes ranging from A (smallest) to D (largest). The size of the ring used depends on the sounding depth of the uterus. The rings come in either prepackaged sterile units or less expensive packages containing 100 rings that must be sterilized with an iodine (1:2,500 for Betadine) or benzalkonium antiseptic solution for 30 minutes before use. The usual method of insertion involves using an inserter rod to push the device into the uterine cavity.

Progestasert System. This system is approved for l year of contraceptive protection, after which it must be replaced. Because of its short usable life, the Progestasert System should be used only in unusual circumstances (such as allergy to copper). This IUD comes in a separate pre-sterilized package. It is shaped like a "T" and consists of ethylene vinyl acetate copolymer. The vertical stem contains a reservoir of 38 mg progesterone and barium sulphate (for visibility on x-rays) in a silicone oil base. It releases 65 mg progesterone per day. The IUD is 36 mm long, 32 mm wide, and when placed in the inserter barrel, has a diameter of 8 mm. The blue-black double string is

attached at a hole in the base of the T. The Progestasert System must be inserted by the withdrawal technique.

Cu-Fix. This frameless IUD has six copper sleeves strung on a surgical nylon thread knotted at one end. During insertion this knot is pushed into the myometrium with a notched needle that works like a miniature harpoon. It is expected to have low rates of expulsion or removal for bleeding or pain because it is frameless.[29]

Figure 15:2 Types of IUDs



Source: Speroff and Darney (1992)

Factors to Consider in Choosing an IUD

Safety and effectiveness depend more on the skill of the IUD inserter and the quality of counseling, selection, and follow-up than on the type of IUD used.[34] With appropriate training, nurses, nurse-midwives, physician assistants, paramedical personnel, and rural village midwives can safely perform routine IUD insertions. Clinicians should practice first on a model, then insert an adequate number of IUDs under supervision. The clinical supervisor should determine the criteria for competence. Competence should not be judged simply by the number of IUDs inserted; it should be based on the ability to consistently demonstrate safe clinical judgment and correct insertion skills.

IUD Insertion

The IUD can be inserted any time during the menstrual cycle. It is not necessary to wait for the woman to have her menses.[39] Of course, the IUD should never be inserted into the uterus of a pregnant woman. If there is any question of pregnancy, perform a pregnancy test or delay insertion until the next menstrual flow, which usually indicates that the woman is not pregnant. A woman who is not pregnant may have an IUD inserted at the following times:

- At any time in the menstrual cycle
- Within 7 days of unprotected intercourse, if the woman wants an emergency (postcoital) contraceptive device
- Immediately following childbirth (within the first 10 minutes); if the IUD is inserted l or 2 days after childbirth, there is a greater risk of expulsion as the uterus contracts[42]
- Within 6 weeks postpartum
- Immediately after or within 3 weeks of an uncomplicated first trimester spontaneous or legally induced abortion
- Within 6 months of childbirth if the woman is lactating, amenorrheic, and normal upon physical exam

INSERTION TECHNIQUE — GENERAL PRINCIPLES

Teaching clinicians respect for clients and confidence in working with them is the centerpiece of training. *Proceed slowly and gently during all phases of IUD insertion.* Since insertion methods differ slightly for the various IUDs, always read and follow the manufacturer's instructions on IUD insertion. The methods differ depending on the size and shape of the IUD, inserter barrel, plunger, packaging, and strings. (See Figure 15:3.)

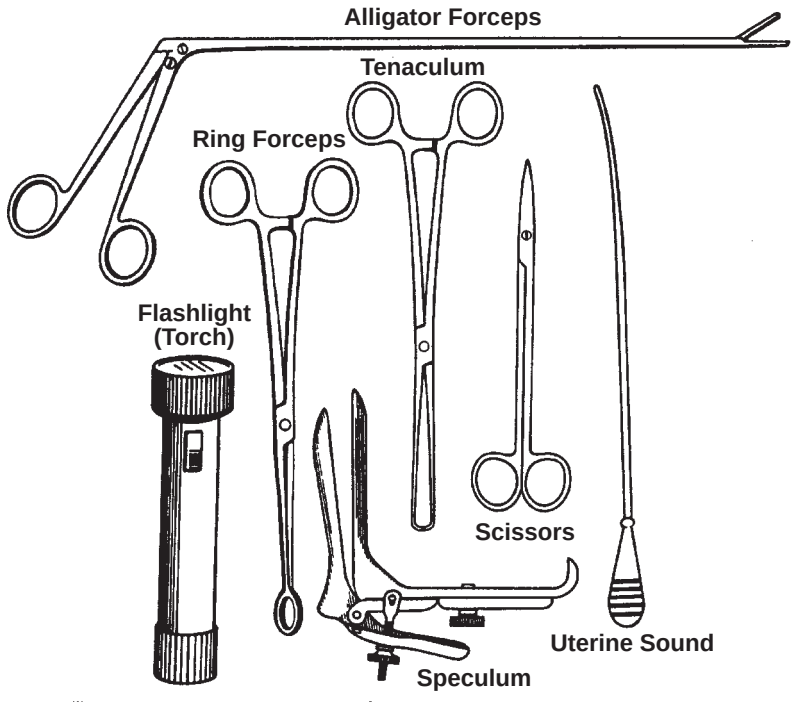
1. Explain the IUD insertion procedure to the patient. Answer questions, eliminate myths about the method, and create a comfortable, confident atmosphere for the client.
2. Administer an analgesic agent or antiprostaglandin prior to insertion, which may reduce discomfort.
3. Perform a careful visual and bimanual exam to rule out pregnancy and active pelvic infection and to diagnose the position of the uterus. IUD perforations usually occur at 90 degrees to the axis of the fundus. An unrecognized retroflexed uterus increases the possibility of uterine perforation at the time of IUD insertion.
4. Use sterile instruments to clean the cervix. After you have inserted a warm speculum and viewed the cervix, apply an antiseptic solution such as 1:2,500 iodine in a motion of concentric circles beginning at the os and spiraling outward on the cervix. If the patient is allergic to iodine, use a chlorhexidine (Hibiclens) solution.

Table 15:3 Intrauterine device termination rates (per 1,000 women) during first and second months after insertion

	Menstrual cycle day of insertion				
Reason for termination	**1-5**	**6-10**	**11-17**	**18+**	**All cycle days**
Expulsion	50.3	30.5	24.0	22.0	39.6
Pregnancy	3.0	4.1	4.8	6.1	3.7
Pain and bleeding	20.9	20.6	27.2	36.7	22.7
Miscellaneous bleeding	5.9	7.9	4.8	9.8	6.8
Personal	25.6	30.9	17.6	19.6	26.2
Pelvic infection	3.0	3.1	3.2	1.2	2.9
Total	108.7	97.1	81.6	95.4	101.9

Source: White (1980)

Figure 15:3 Minimal equipment for IUD insertion



5. In some instances, you may inject intracervical local anesthesia at this point (see the section on "Paracervical Anesthesia or Paracervical Block").
6. Grasp the anterior lip of the cervix with a tenaculum about 1.5 to 2.0 cm from the os. Close the single-tooth tenaculum slowly, one notch at a time. (Using a small amount of local anesthesia may decrease the discomfort of tenaculum placement.)
7. Sound the uterus slowly and gently. Place a cotton swab at the cervix when the sound is all the way in. Remove the sound and the swab at the same time to measure the depth of the fundus to within 0.25 cm.
8. Load the IUD into the inserter barrel. Use sterile conditions. To minimize the chance of introducing contamination, do not remove the IUD from the insertion tube before placing it in the uterus. Do not bend the arms of the "T" more than 5 minutes before it is to be introduced into the uterus. Strict aseptic techniques can be

maintained in the absence of sterile gloves by folding the arms through the packaging. Use a flat surface and pull the solid rod partially from the package (so it will not interfere with assembly).

9. Insert the IUD into the cavity of the uterus by retracting the outer barrel over the plunger (this is the withdrawal technique). (See Figure 15:4.) Insertion should be done slowly and without much force.
10. To guarantee high fundal placement, gently push the inserter tube until resistance is felt.
11. Release the IUD, withdrawing the insertion tube no more than 1 cm while the solid rod is not permitted to move. This movement releases the arms of the "T".
12. Withdraw the solid rod while holding the insertion tube stationary.
13. Withdraw the insertion tube from the cervix.
14. Clip the strings. Be sure enough of the strings are visible (2.5 cm) to facilitate checking for the presence of the IUD. Note the length of the visible strings in the patient record.
15. Some clinicians have the patient feel for the strings of her IUD before she leaves the exam room. At the very least, as part of the counseling process explain to the client how to locate the string.

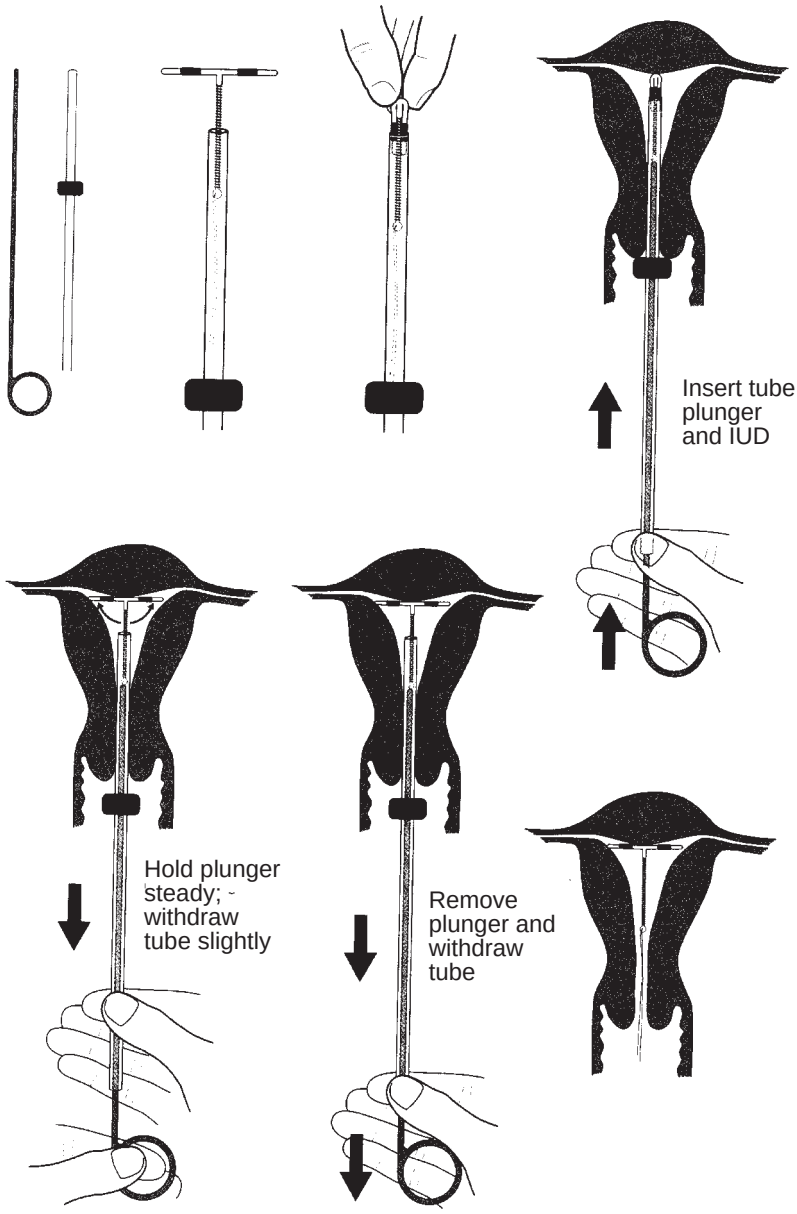
Cardinal Rule for IUD Insertion

Everything done at the time of IUD insertion and removal CAN and SHOULD be done slowly and gently.

IUDS IN NULLIPAROUS WOMEN

Women who have never been pregnant may use an IUD safely, but they may wish to consider another type of contraceptive method. Compared to women who have given birth (parous women), nulliparous women are more likely to experience an IUD expulsion, cramping, or bleeding. Insertion also is more difficult because the cervical os and uterine cavity are smaller.[7]

Figure 15:4 Withdrawal technique



Source: Speroff and Darney (1992)

Prophylactic Antibiotics and IUD Insertion

There is a general consensus that prophylactic antibiotics should *not* be used routinely at IUD insertion as a measure to prevent subsequent infection. However, two published studies on the subject are at odds; one supports this position but the other does not.[13,27] Some clinicians provide women with prophylactic antibiotics at the time of IUD insertion in areas where STIs are common. Observe the following guidelines for using prophylactic antibiotics before IUD insertion:

- Assess the patient to make sure she has no precautions to IUD insertion, no clinically acute infection, and no contraindications to taking antibiotics.
- Give the woman 200 mg of doxycycline orally at the time of insertion and l00 mg 12 hours later.
- Give breastfeeding women 500 mg of erythromycin orally l hour before insertion or at the time of insertion and 500 mg orally 6 hours after insertion. (Doxycycline is contraindicated during pregnancy and lactation because of potential effects on newborns.)

Immediate Postpartum Insertion of IUDs

If labor and delivery were normal, the uterus is firm, and bleeding has subsided, a Cu T 380A may be inserted. Inserting the IUD immediately following delivery of the placenta (postplacental insertion) or during the first week after delivery (postpartum insertion) is safe and convenient. There is no increased risk of infection, perforation, or bleeding.[8,34] To reduce the risk of infection, use a sterile long-sleeved glove. (See Table 15:4.)

A major drawback to inserting the IUD so soon following delivery is the high rate of expulsion. Reported rates have ranged from 9% in a Chinese study[44] to 22% in a Family Health International multicenter trial,[9] to 31% to 41% in a WHO multicenter trial.[42] The expulsion rate for copper-bearing IUDs appears to be lower than the expulsion rate for the stringless, single-coil stainless steel ring.[34] The chance of expulsion can be reduced if the clinician is experienced in

IUD insertion, an ergot preparation is used to enhance uterine contractility,[21] and the following steps are taken:

1. Massage the uterus until bleeding subsides.
2. Insert the IUD within l0 minutes of delivery of the placenta.
3. Administer methergine (+/-) but no antibiotics, analgesics or anesthesia.
4. Grasp the IUD with ring forceps.
5. Grasp the cervix with the second ring forceps.
6. Manually place the IUD in the uterine cavity.
7. Grasp the uterus with the hand you have placed on the abdomen.
8. Place the IUD high in the fundus.
9. Release the IUD and rotate the ring forceps 45 degrees.
10. Release the forceps and remove.

Discuss with your client the potential for IUD expulsion. This discussion will help to ensure that the client will return for a follow-up visit after insertion. Also tell her that, despite higher expulsion rates, cumulative pregnancy rates for immediate postpartum IUD insertion are comparable to or lower than those for interval IUD insertions, perhaps because women are less fertile in the postpartum period.[21] With modern copper IUDs, proper insertion techniques, and adequate follow-up, the pregnancy rate after 24 months following postpartum IUD insertion is 2.0 to 2.8 per 100 users.[21]

The string of the Cu T 380A may lie entirely within the uterine cavity after postplacental insertion. If a postpartum woman is examined l month after delivery and the string is not visible, determine the location of the Cu T 380A. Use a sound, alligator forceps, or other sterile instrument to explore the uterine cavity (pregnancy at 4 weeks postpartum is very unlikely). If you detect the IUD in the uterus, tease the string down to the cervical os. Otherwise, as long as you have confirmed the presence of the IUD during sounding, simply leave both the IUD and the string in the uterine cavity.

Table 15:4 Advantages and disadvantages of post-placenta or immediate postpartum IUD Insertion

Advantages	Disadvantages
• Patient already at health facility • Contraindication of pregnancy is not present • Fewer complaints of pain and bleeding • Risk of perforation is same or lower • Lower cost • Insertion technique is easier to master	• Expulsion rates higher • Continuation rates slightly lower • Higher rates of missing strings • Counseling postpartum is difficult • Special instructions needed for expulsions

Source: O'Hanley and Huber (1992); Stewart (1993)

Paracervical Anesthesia or Paracervical Block

A paracervical block using no more than 10 to 20 cc of l% lidocaine without epinephrine can prevent the pain of an IUD insertion or a difficult removal. Paracervical anesthesia is particularly beneficial at the time of insertion for a woman who has never been pregnant or for a woman who has a history of vasovagal reactions. Remember to ask the patient whether she has any known allergies, especially to iodine or any local anesthetic. A suggested procedure for performing a paracervical block is as follows:

l. Perform a bimanual pelvic exam; insert a speculum in the vagina to obtain good visualization of the cervix.

2. Clean the cervix and vagina with antiseptic material.

3. Ask the patient to inform you if she experiences nausea, dizziness, ringing of the ears, or tingling of the lips from the procedure. It is not uncommon for these symptoms to occur, but they will pass quickly.

4. Inject 2 cc of lidocaine at the tenaculum site and then apply the tenaculum to the upper lip of the cervix.

5. Inject the lidocaine around the cervix. Different clinicians use different placements of the injections. One technique is to inject 2 to 5 cc at sites corresponding to 4 o'clock or 5 o'clock and 7 o'clock or 8 o'clock on a clock face (a total of 4 to 10 cc).

6. Insert the needle just under the mucosa in the connective tissue. This method assures rapid and adequate distribution of the anesthetic because most of the smaller blood vessels and capillaries are in this region. Aspirate lightly with each injection to avoid direct intravenous injection.

A serious reaction will be extremely unlikely to occur if the total used is less than 20 cc. Anesthesia takes effect in 2 to 5 minutes.

IUD Removal

Follow the rules for IUD removal:

- Remove the IUD at the time of menses or at midcycle. Removal at these times may be easier than at other times during the cycle.
- Use a paracervical block to make the removal easier for both the provider and the client. A block is especially helpful for clients who are prone to fainting, have severe cramps, or are nulliparous.
- Apply gentle, steady traction to prevent the string from breaking during IUD removal.
- If you do not see the strings, probe for them in the cervical canal with narrow forceps (or the alligator forceps).
- If you cannot remove the IUD with gentle traction, use a tenaculum to steady the cervix and reduce the anteversion or retroversion to assist removal. If this does not work, dilate the cervix with dilators. Dilators should always be available in a clinic that manages IUD complications. For difficult removals, use a laminaria tent to dilate the cervix.
- When the IUD (with or without its strings) is in the uterus, probe the endometrial cavity with alligator forceps (with which the strings or the IUD itself may be grasped), a hook, uterine packing forceps, or a Novak curette. Proficiency in removing the IUD with one of these instruments when the strings are absent or entirely within the uterine cavity can prevent unnecessary hospitalizations.

MANAGING PROBLEMS AND FOLLOW-UP

Serious side effects and complications from IUDs are usually preventable. The rule of thumb is *when in doubt, take an IUD out.* Seven potential complications from IUDs are listed in order of increasing severity.

SPOTTING, BLEEDING, HEMORRHAGE, AND ANEMIA

The average user of a nonmedicated IUD has an increase in blood loss, which is usually minor and of little consequence. However, 10% to 15% of IUD users will have their IUD removed because of symptoms and signs associated with bleeding or spotting. Before inserting an IUD, make the patient aware of the likelihood of bleeding changes. Abnormal bleeding can also be a sign of pregnancy or infection—two problems that must always be ruled out during the process of evaluating IUD clients.

1. If the patient has a hemoglobin (Hgb) level of less than 11.5 gm at insertion

- provide her with FeSO4* (300 mg) to take 1 tablet daily for 1 to 2 months
- instruct in proper nutrition, including iron-rich foods
- repeat Hgb at 3 month follow-up
- reassure the patient that the bleeding will likely decline in subsequent cycles
- provide FeSO4* (as in step 1)
- provide ibuprofen† 400 mg t.i.d. for first 3 days of cycle
- examine for other pathology and/or symptoms such as:
  - — cancer of the cervix and uterus
  - — cervical and uterine polyps
  - — leiomyomat
  - — postcoital bleeding
  - — chronic cervicitis
  - — dysfunctional uterine bleeding

2. If within 3 months of insertion the IUD user complains of excess bleeding	• reassure the patient that the bleeding will likely decline in subsequent cycles • provide FeSO4 (as in #1) • provide ibuprofen* 400 mg t.i.d. for first 3 days of cycle • perform Hgb and treat as steps 1, 6 and 8 • examine for other pathology and/or symptoms such as: — cancer of the cervix and uterus — cervical and uterine polyps — leiomyomata — postcoital bleeding — chronic cervicitis — dysfunctional uterine bleeding
3. If at any time the excess bleeding is associated with pain	• examine the patient to rule out a pelvic infection • consider a sensitive pregnancy test to rule out pregnancy (including ectopic pregnancy)
4. If the Hgb is less than 9 gm	• remove IUD • provide FeSO4 (300 mg) daily for 2 months • repeat Hgb at 1 month • provide alternative method of contraception
5. If there is a Hgb fall of >2 gm	• remove IUD • treat as in #4
6. If bleeding is thought to be associated with endometritis	• remove IUD • culture for gonorrhea • treat with antibiotics (Doxycycline for 10 days) • treat partner • provide an alternative method of contraception

7. If the client desires IUD removal because bleeding is not tolerable	• remove IUD • provide alternative method of contraception
8. If the client is over 40 years old and having prolonged menses with intermenstrual bleeding	• remove the IUD • refer for diagnosis and treatment if abnormal bleeding continues

*Ferrous gluconate is also acceptable, may be less expensive, and may cause less gastric upset.

†Ibuprofen is an example of one of the nonsteroidal antiinflammatory drugs that can reduce cramping and bleeding.

Cramping and Pain

The patient may feel slight pain at the time of insertion of an IUD. She may continue over the next 10 to 15 minutes to feel cramping pain, which soon disappears. Increased menstrual pain (dysmenorrhea) may accompany IUD use. Approximately 15% to 40% of IUD removals are for complaints related to pain. Cramping and abdominal pain may be a sign of pregnancy or infection, two problems you must always rule out when evaluating IUD users with abdominal pain.

1. Pain with sounding of the uterus during insertion	• sound slowly and gently • consider smaller sound • if severe, stop and check the alignment of the uterine cavity, if the cavity is normal, use a paracervical block
2. Cramping/pain immediately after insertion, for a day or so thereafter and/or with each menses	• if severe: — consider IUD removal • if mild: — provide mild analgesia such as acetaminophen 1 gm, every 4 hours as needed, or ibuprofen 400 mg, every 4 hours as needed

3. Pain at time of insertion, persistent and increasing, plus additional signs of abdominal tenderness	• if strings are present: — presume partial perforation has occurred; remove IUD and treat as pelvic infection • if strings are present but the IUD is not: — consider the possibility of perforation (see IUD removal section) — remove the IUD
4. Partial expulsion of an IUD	• if there is no infection of cervix or uterus: — insert another IUD — provide 5-7 days of Doxycycline, 100 mg every 12 hours • if there is an infection of the cervix or uterus or the possibility of infection: — remove the IUD — provide alternative contraception — treat with antibiotic as above and insert another IUD after 3 menstrual cycles
5. Pelvic inflammatory disease	• remove IUD, treat as described in the section on PID • provide alternative contraception

6. Severe post-insertion pain with fainting	• give spirits of ammonia by nasal inspiration • if placement is improper: — remove the IUD, reevaluate the uterus, resound, and insert another IUD • if the IUD is felt to be properly positioned and the client's pulse is less than 60: — consider giving atrophine 0.4-0.6 mg intramuscularly or intravenously — consider using a paracervical block — provide pain medication (i.e. acetaminophen or ibuprofen) — remove the IUD if necessary
7. Spontaneous abortion	• remove IUD • treat according to the section on Pregnancy
8. Ectopic pregnancy	• treat according to the section on Pregnancy

EXPULSION OF THE IUD (PARTIAL AND COMPLETE)

From 2% to 10% of IUD users spontaneously expel their IUD within the first year. The symptoms of an IUD expulsion include unusual vaginal discharge, cramping or pain, intermenstrual spotting, postcoital spotting, pain during intercourse (male and female), lengthening of the IUD string, and presence of the hard plastic of the IUD at the cervical os or in the vagina. If in examining the patient you do not feel an IUD string, suspect an expulsion.

1. If the IUD string is not felt, an expulsion may have occurred	

2. If a menstrual period is delayed	• check for the IUD string and evaluate for a pregnancy because this may be the first indication of a "silent" expulsion and pregnancy
3. If partial expulsion	• remove the IUD • evaluate for pregnancy and/or infection — if present, treat as indicated • if neither pregnancy nor infection are present, insert another IUD and give 5 to 7 days of Doxycycline 100 mg every 12 hours
4. If the expulsion is complete	• evaluate for pregnancy • insert another IUD if patient is not pregnant and has no infection

String Problems

1. Partner is irritated by string	• counsel partner at time of insertion that he may feel the string, but it usually won't hurt him • if the string has a short, sharp point coming from the cervix — the string may be cut shorter and the new length carefully recorded — the IUD may need to be removed and replaced, and the new string made longer • if the string is long: — try shortening the string — occasionally, the IUD needs to be removed (see next set of instructions)

2. String is long	• rule out expulsion by exam and by sounding of cervix • if the IUD seems to be in place: trim the string • if there is any doubt about the IUD being in place: — remove the IUD and replace with a new IUD
3. String is absent (as determined by patient or examiner)	• if menses has been missed: — rule out pregnancy by exam and test. If both are negative, evaluate as noted below. If pregnancy is detected, consult the next section. • if menses has not been missed and no abdominal pain is present: — use another method of contraception and wait until next menses; examine during next menses • if the IUD string is not present, then prepare the cervix as per IUD insertion technique and explore the uterus with alligator forceps
i) if the IUD is found:	• if the IUD does not seem to be disturbed, reposition the string, treat the patient with antibiotics, and follow the patient routinely • if there is any question of IUD dislodgement or abnormal placement or position, remove the IUD, treat the client with an antibiotic, and insert another IUD

ii) if the IUD is not found:

- refer the client to a higher level facility
- obtain an ultrasound (or X-ray)
  a) if the IUD is not seen on ultrasound or X-ray:
     — do a pregnancy test
     — insert another IUD per insertion guidelines
  b) if the IUD is seen on the ultrasound:
     — clarify the location of the IUD and rule out perforation; may need to insert another IUD; take an x-ray or ultrasound of the pelvis
     — if perforation has occurred, treat it accordingly
     — if no perforation has occurred, then the x-ray should show 2 IUDs in the uterus (usually both will have to be removed and another inserted)

PREGNANCY

Approximately one-third or fewer of IUD-related pregnancies are attributable to undetected or partial expulsions. Abortion and severe pelvic infection are more likely if the IUD is left in place during a pregnancy. About 5% of pregnancies will be ectopic.

- Inform the patient of the risks from a pregnancy with an IUD in place.
- If abortion is a legal option, determine whether the patient wishes to continue the pregnancy. If the woman is pregnant and the IUD has completely perforated the uterus and is in the abdominal cavity, there may not be any risk to the pregnancy. As the degree of perforation is usually not known, treat the condition as though the IUD were in situ and the string not seen.

1) If the patient is undergoing a spontaneous abortion:	• empty the uterus of conception products • remove the IUD
a) If the patient is in severe pain:	• provide doxycycline or ampicillin for 7 days
b) If the patient is anemic:	• check for an ectopic pregnancy • provide analgesic medication • give $FeSo_4$
2) If the patient requests an abortion	• refer for a legal abortion
3) If the woman wishes to continue the pregnancy and the IUD strings are visible	• remove the IUD • warn the patient that an ectopic pregnancy should be suspected • refer the patient for prenatal care
4) If the patient wishes to continue the pregnancy and the IUD strings are not visible	• if signs of an intrauterine infection exist: — counsel the patient about the life-threatening situation — recommend evacuation of the uterus and treat the patient with antibiotics — evacuate and examine the tissue to rule out ectopic pregnancy — refer the patient for special obstetric care • if no signs of infection exist: — inform the patient to watch for signs of infection (such as pain, discharge, bleeding, fever, muscle aches) and of ectopic pregnancy and instruct her where to go should those complications occur — refer the client for prenatal care — warn the client about the possibility of perforation — recover the IUD at delivery

Uterine Perforation, Embedding, and Cervical Perforation

The incidence of perforation is approximately 1 in 1,000. Perforation of the uterus by an IUD usually occurs at one of three sites: (1) in the uterine fundus, (2) in the body of the uterus, or (3) through the cervical wall itself. The following guidelines should be used in cases of perforation.

1) IUD plastic device sticking through the cervix	• perform a paracervical block, if needed, to perform the procedure • provide analgesia • use alligator forceps to grasp the IUD inside the cervix in the lower uterine cavity, push the IUD back into the uterus, and then remove it through the cervical os • treat with antibiotics • provide alternative contraception or insert a new IUD
2) IUD string does not allow IUD to be removed with significant pressure	• try the recommendations in the section on String Problems • provide a paracervical block • if the IUD is found in the uterus: — use alligator forceps to grasp the IUD in the cervix or uterus and remove • if the IUD is not removable, refer the client for more specialized care • if the IUD is not found in the uterus or cervix (and the string is seen): — refer the client to a gynecologist — provide an alternative method of contraception — provide an antibiotic *This is one circumstance where expert help is truly required, because the IUD may be out of the uterus.*

3) IUD perforation identified by X-ray or ultrasound and no string visible	• if the client has pain, evidence of bowel obstruction or pelvic infection — refer the client to a gynecologist or a general surgeon — treat with antibiotics; surgery may be required • if the client has no pain or evidence of obstruction, infection, or pregnancy — provide the patient with alternative contraception — inform the patient of signs of obstruction or pelvic infection or where to go if those signs develop • if the client is pregnant and the IUD is outside the uterus — provide information as per pregnancy with IUD in situ *Surgery may be an elective alternative.*

Pelvic Inflammatory Disease (PID)

PID is a serious complication either from the IUD itself or from exposure to an STI. PID due to the IUD occurs most commonly in the first few weeks following insertion. Regardless of cause, PID needs aggressive treatment and follow-up to be certain it is adequately treated. An IUD should not be reinserted in someone at high risk for developing another pelvic infection. In any patient, wait at least 3 months following treatment for an acute pelvic infection before you insert an IUD. The accurate diagnosis of PID is difficult, but the following signs suggest PID:

- An oral temperature of 38˚ C or above
- Suprapubic tenderness and guarding
- Tenderness or pain while moving the cervix during pelvic exam

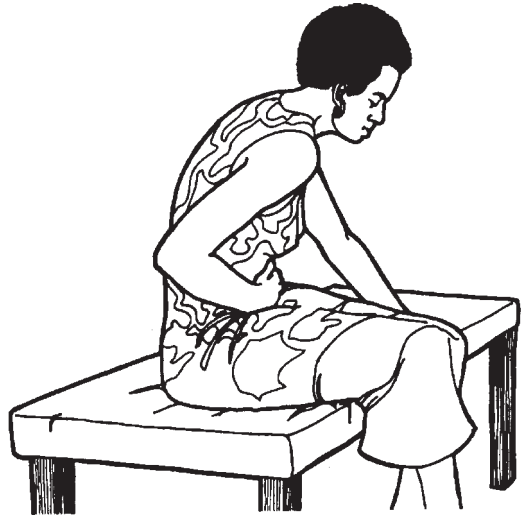
- Purulent discharge from the cervix
- Tenderness of the uterus to palpation
- Adnexal tenderness or adnexal palpable mass or masses

Generally, it is best to treat PID by removing the IUD and giving the woman appropriate antibiotics. If the IUD is left in place, follow-up may be inadequate and a smoldering infection may persist that can progress from endometritis to a more generalized infection. Following an episode of PID, women who want subsequent children should be encouraged to use a method other than an IUD. Pelvic infection during pregnancy can be extremely dangerous.

If the IUD is left in place while the PID is being treated, give a full 10 to 14 days of antibiotics. Reexamine the patient after she has completed her course of treatment. Because the Dalkon Shield is associated with a very high risk of PID, any woman still using a Dalkon Shield should have it removed.

A chronic, foul vaginal discharge in an IUD user is considered to be PID until proven otherwise.

Figure 15:5: Remove the IUD with the first episode of pelvic inflammatory disease



1) If patient is pregnant and has symptoms of PID	• see the section on pregnancy
2) If patient has mild pelvic infection, which is defined as a fever of 38˚ C or lower; no abdominal guarding; mild suprapubic, uterine, and/or adnexal tenderness; and no adnexal masses	• remove the IUD • provide alternative contraception • provide treatment (see Chapter 6) • reexamine in 1 week • advise the patient to seek immediate care if symptoms worsen
3) If the patient has moderate pelvic infection, which is defined as a fever lower than 39˚ C; abdominal guarding; and no rebound, adnexal masses, or vomiting	• follow the same directions as in #2 • consider hospitalization
4) If the patient has a severe pelvic infection with a fever greater than 39˚ C; guarding or rebound, pelvic masses, or vomiting and/or appears acutely ill	• refer her for hospital care *This is a serious, life-threatening problem that needs expert care.*

INSTRUCTIONS FOR USERS

After you have your IUD inserted:

1. Check your strings. Before you leave the office or clinic, learn how to feel the strings that protrude 2 inches or so into the vagina. If you cannot feel the strings or if you can feel the plastic part, your IUD may not be protecting you against pregnancy, and you should use another method until you can return to the clinic to have your IUD checked. Your uterus can expel an IUD without your knowing it. Check for the strings frequently during the first few months you have the device, after each period, and any time you have abnormal cramping while menstruating.

2. Beware of infection. When your IUD is inserted, find out where you can go to be treated if you get an infection. If at any time you have fever, pelvic pain or tenderness, severe cramping, or unusual vaginal bleeding, contact your clinician immediately because you may have an infection. IUDs can cause internal pelvic infection (in contrast to vaginal infections) that can lead to chronic pain, hysterectomy, or even death. Women in mutually faithful relationships appear to have little increased risk of infection.[14]

3. Watch for your periods. If you miss a menstrual period, contact your family planning worker immediately. The most commonly reported side effects of the IUD are increased menstrual flow, menstrual cramping and spotting, and increased mucous discharge. Remember that if you cannot tolerate the IUD, you can always have it removed. Heavier menstrual bleeding may be serious if you are anemic. However, a small increase in the menstrual flow is normal with the IUD, especially during the first 2 to 3 periods.

No matter what other methods of contraception a woman is using, if she is at any risk because her partner tests HIV positive or because she does not know her partner's HIV status, she should be advised to use latex or plastic condoms with every sexual act. No other contraceptive method besides abstinence provides the same degree of protection.

4. Do not try to remove the IUD yourself. Do not let your partner pull on the strings. The clinician will have a better idea of the angle at which the IUD went in. It should come out the same way.

5. Learn and pay attention to the IUD Warning Signs.

Early IUD Warning Signs

Caution

- **P** ■ Period late (pregnancy) or abnormal spotting or bleeding
- **A** ■ Abdominal pain, pain with intercourse
- **I** ■ Infection exposure (any STD), abnormal discharge
- **N** ■ Not feeling well with fever and chills
- **S** ■ String missing, shorter, or longer than usual

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